Space Weather Forecast

Issued on Friday, 17 November 2023 at 13:25 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Increasing risk of Moderate flares throughout the period

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has remained Low over the past 24 hours, with only isolated Common class flares, the largest of which from a region which is currently emerging onto the southeast limb. There are two other sunspot regions on the visible disc, one relatively small and magnetically complex, and the other a small and weak region. Both are in the western hemisphere, and have been stable.

There have been a few CMEs in the last 24 hours but none are expected to be earth directed.

Solar Wind / Geomagnetic Activity: Solar winds, as measured by ACE and DSCOVR at L1, started at Slightly Elevated levels around 440 km/s but eased down to ambient and is currently around 330km/s. It is possible that a very weak connection to a small coronal hole feature did occur, but if this did happen then the connection was very weak, The strength of the magnetic field was weak throughout, while the important north--south component was often southward directed but also weak. The resulting geomagnetic activity was Quiet to unsettled.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to remain Low, but with an increased chance of isolated Moderate class flares due to the new region that is currently rotating onto the southeast limb, plus other regions that are expected to rotate onto the visible disc through the forecast period.

Solar Wind / Geomagnetic Activity: The CME associated with the 16/0100UTC eruption may reach Earth late on day 3 (19th), but confidence is low regarding this. However, any arrival is unlikely to produce a significant geomagnetic response.

The solar wind is expected to remain at predominantly background levels today and much of tomorrow. Slightly elevated wind speeds may also occur from late tomorrow (18th) due to further coronal hole influence, from a new feature which has developed near centre disc over the past 24 hours. The influence of this thin coronal hole is likely to wane later in the period.

Geomagnetic activity is expected to remain predominantly Quiet, but with isolated Unsettled intervals possible throughout, especially late tomorrow (18th) into day 3 (19th). There is a risk of a G1/minor storm on day 4 (20th) due to the possible arrival of the above mentioned CME, however there is significant uncertainty regarding details

Energetic Particles / Solar Radiation: No solar radiation storms are expected.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	5	5	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	20	25	30	30
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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